

Title: Methods and Devices For Retrieving  
A Subject's Physiological History  
From A Biological Sample Analysis

Inventor: Michael Scott Ehrlich  
Docket No: C1159.70000US01  
Express Mail No: EV292456465US

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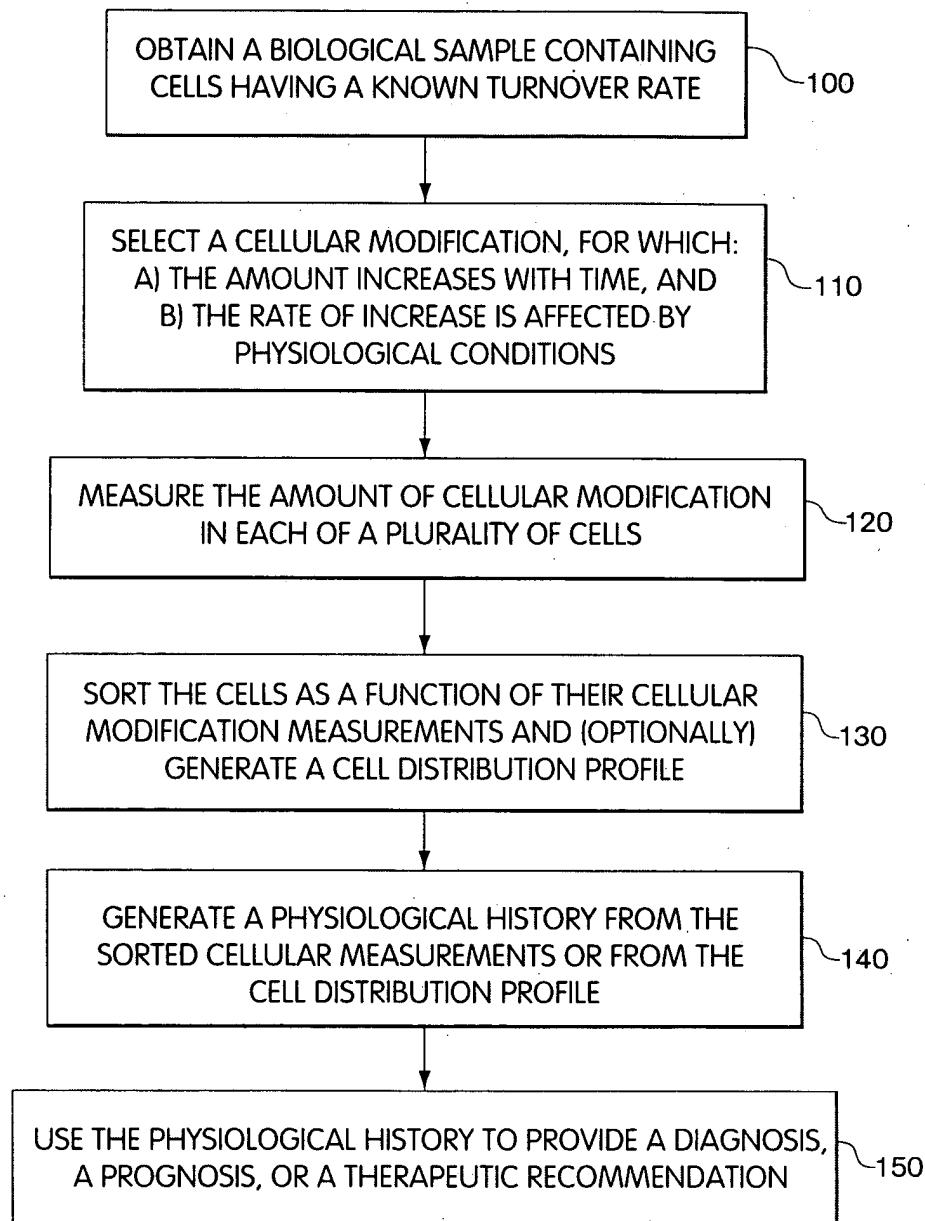


Fig. 1

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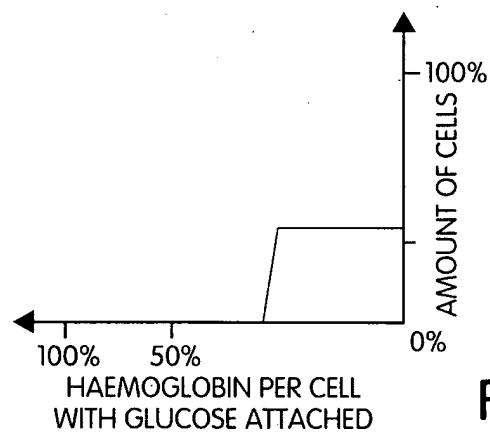


Fig. 2A

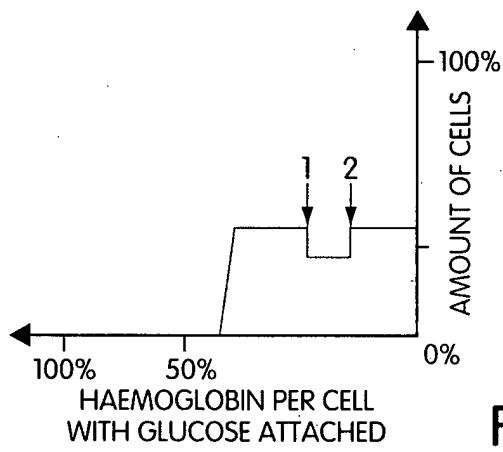


Fig. 2B

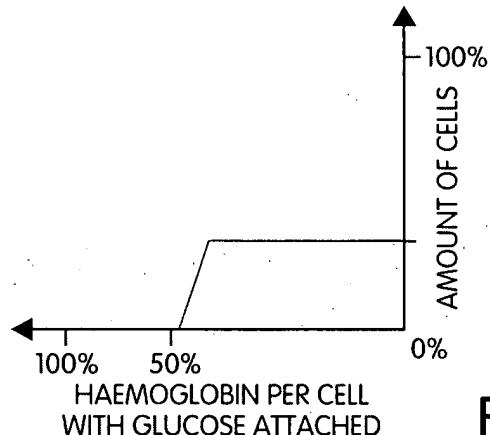


Fig. 2C

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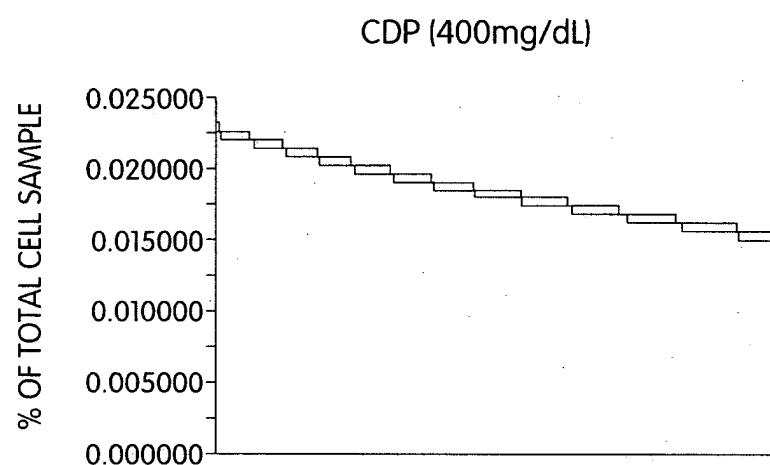


Fig. 3

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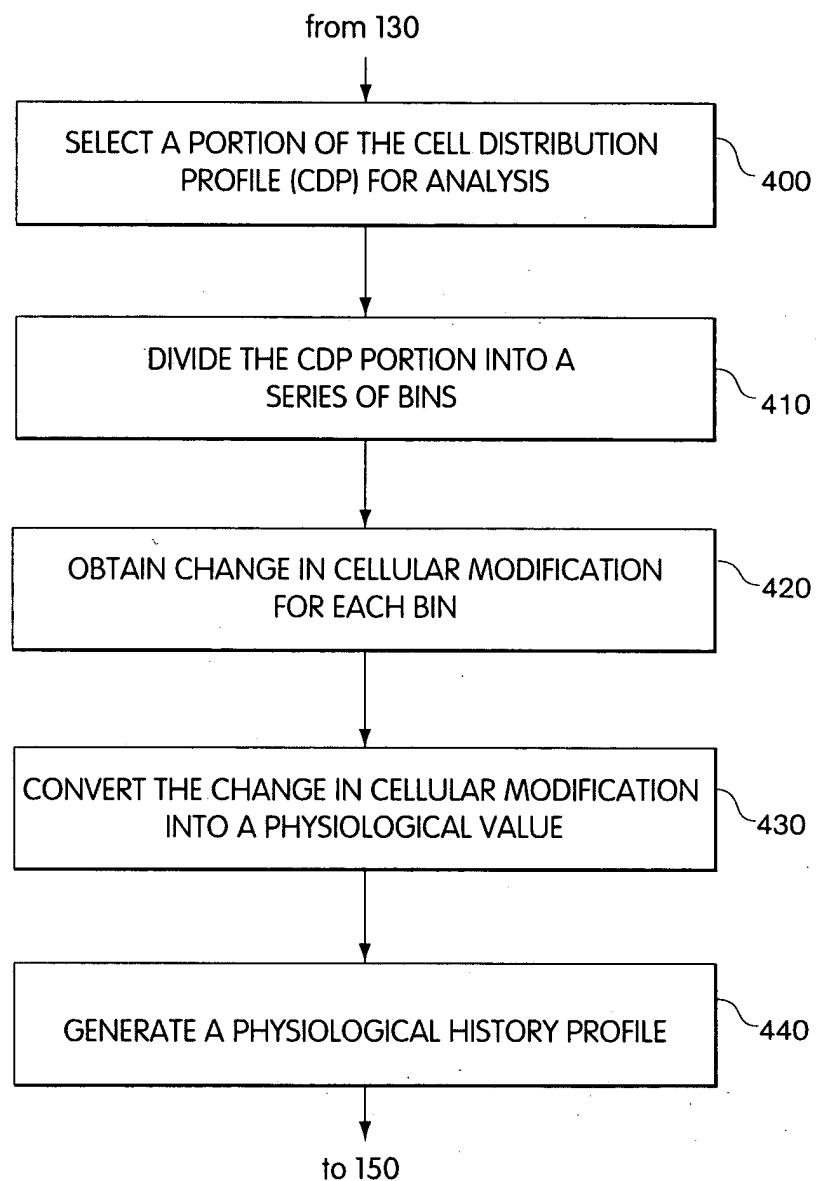


Fig. 4

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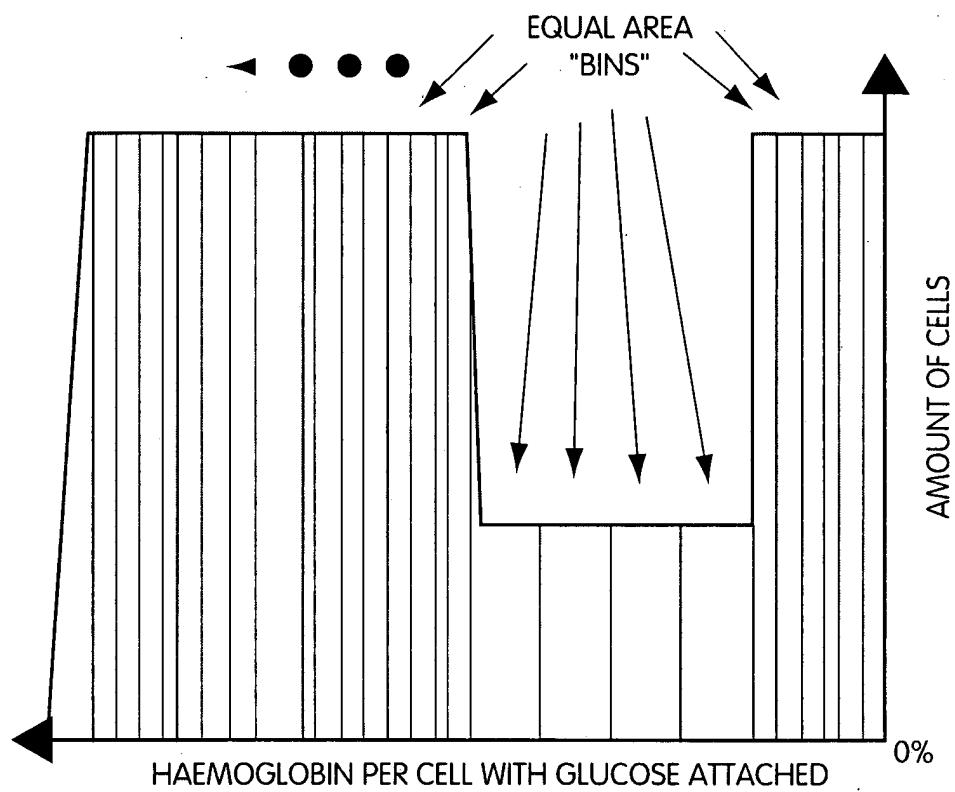


Fig. 5

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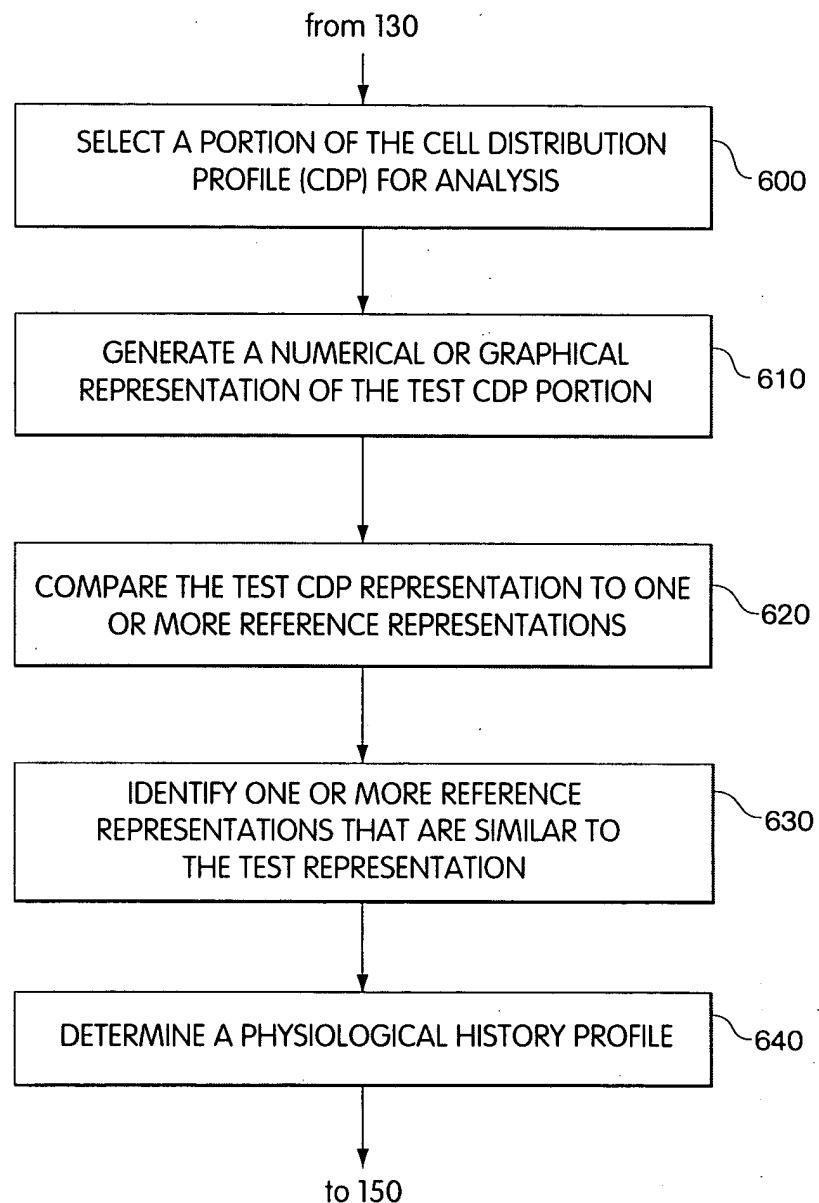


Fig. 6

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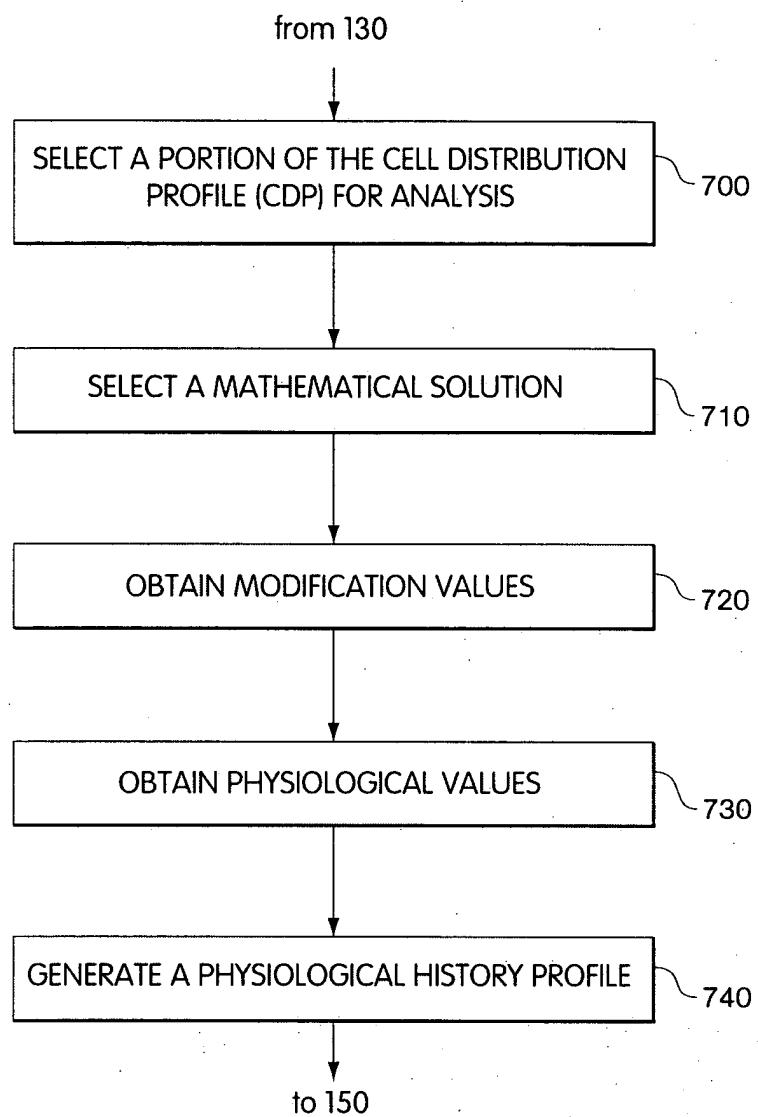


Fig. 7

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Given  $t_{sp}$  (where  $t_{sp} < 0$ ) and given  $T$ , find  $g(t_{sp})$ :  
Step 1: Solve for  $X_{sp}$

$$t_{sp} = -L \cdot \frac{\sum_{X_{sp}}^0 F(X) \Delta X}{\sum_{100\%}^0 F(X) \Delta X}$$

Step 2: Solve for  $K_a$

$$K_a = \frac{T}{L} \cdot \sum_{100\%}^0 F(X) \Delta X$$

Step 3: Solve for  $\delta$

$$\sum_{X_{sp} - \frac{\delta}{2}}^{X_{sp} + \frac{\delta}{2}} F(X) \Delta X = K_a$$

Step 4: Correct for non-linearity

$$r(t_{sp}) = \frac{100\%}{100\% - X_{sp}} \cdot \delta$$

Step 5: Solve for  $K_b$

$$K_b = \frac{K_{rate}}{T}$$

Step 6: Solve for  $g(t_{sp})$

$$g(t_{sp}) = K_b \cdot r(t_{sp})$$

Where

$$K_{rate} = 10^8 \frac{mg \cdot s}{dL \cdot \%}$$

Fig. 8

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Given  $t_{sp}$  (where  $t_{sp} < 0$ ) and given  $\delta$ , find  $g(t_{sp})$ :  
 Step 1: Solve for  $X_{sp}$

$$t_{sp} = -L \cdot \frac{\sum_{X_{sp}}^0 F(X) \Delta X}{\sum_{100\%}^0 F(X) \Delta X}$$

Step 2: Solve for  $K_a$

$$\sum_{X_{sp}-\frac{1}{2}}^{X_{sp}+\frac{\delta}{2}} F(X) \Delta X = K_a$$

Step 3: Solve for  $T$

$$T = \frac{K_a \cdot L}{\sum_{100\%}^0 F(X) \Delta X}$$

Step 4: Correct for non-linearity

$$r(t_{sp}) = \frac{100\%}{100\% - X_{sp}} \cdot \delta$$

Step 5: Solve for  $K_b$

$$K_b = \frac{K_{rate}}{T}$$

Step 6: Solve for  $g(t_{sp})$

$$g(t_{sp}) = K_b \cdot r(t_{sp})$$

Where

$$K_{rate} = 10^8 \frac{mg \cdot s}{dL \cdot \%}$$

Fig. 9

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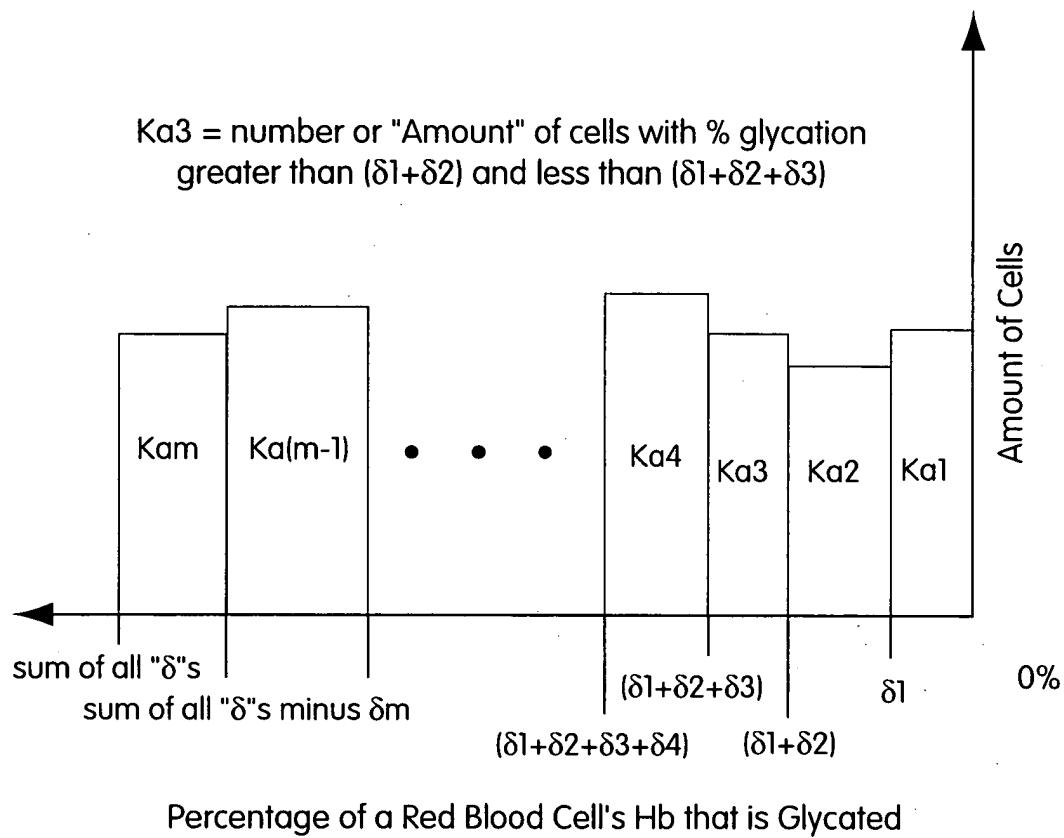


Fig. 10A

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Given  $\delta_1 - \delta_m$  and  $K_{a1} - K_{am}$ , find  $t_{sp}$  and  $g(t_{sp})$ :  
 Step 1: Solve for  $t_{sp}$

$$t_{sp} = -L \cdot \frac{\frac{K_{sp}}{2} + \sum_{n=sp-1}^1 K_{an}}{\sum_{n=m}^1 K_{an}}$$

Step 2: Solve for  $X_{sp}$

$$X_{sp} = \frac{\delta_{sp}}{2} + \sum_{n=sp-1}^1 \delta_n$$

Step 3: Solve for  $T_{sp}$

$$T_{sp} = \frac{K_{asp}}{\sum_{n=m}^1 K_{an}} \cdot L$$

Step 4: Correct for non-linearity

$$r(t_{sp}) = \frac{100\%}{100\% - X_{sp}} \cdot \delta_{sp}$$

Step 5: Solve for  $K_b$

$$K_{bsp} = \frac{K_{rate}}{T_{sp}}$$

Step 6: Solve for  $g(t_{sp})$

$$g(t_{sp}) = K_{bsp} \cdot r(t_{sp})$$

Where

$$K_{rate} = 10^8 \frac{mg \cdot s}{dL \cdot \%}$$

Fig. 10B

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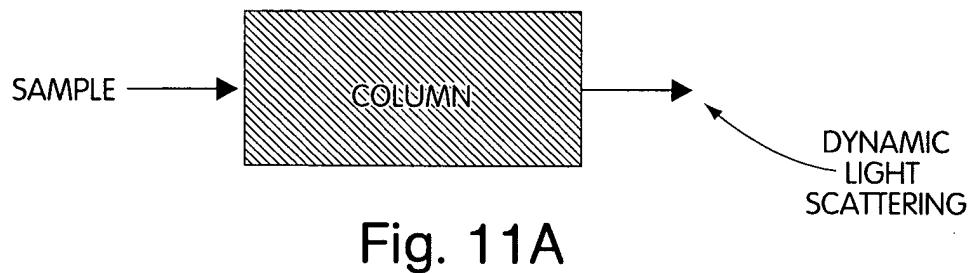


Fig. 11A

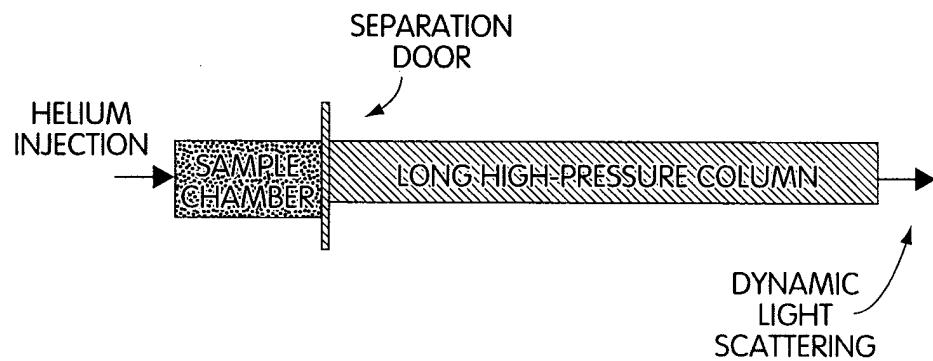


Fig. 11B

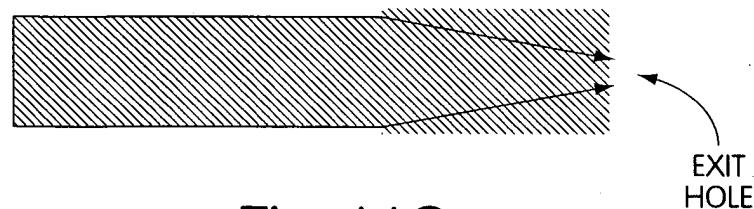


Fig. 11C

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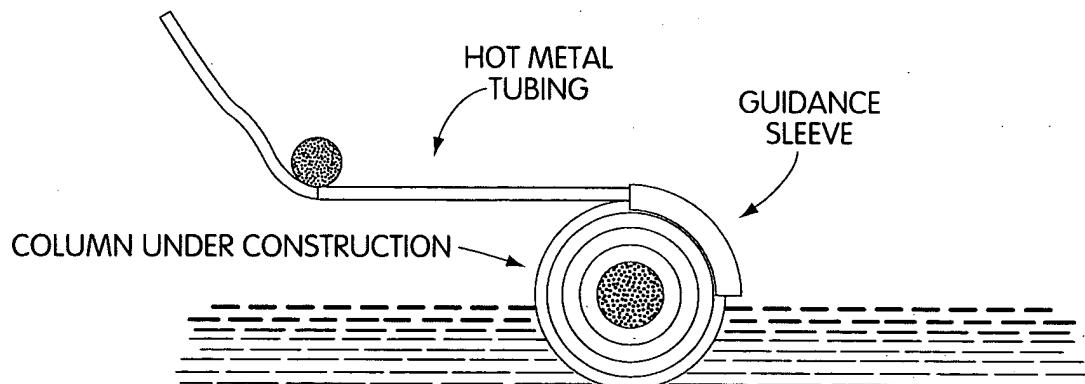


Fig. 12A

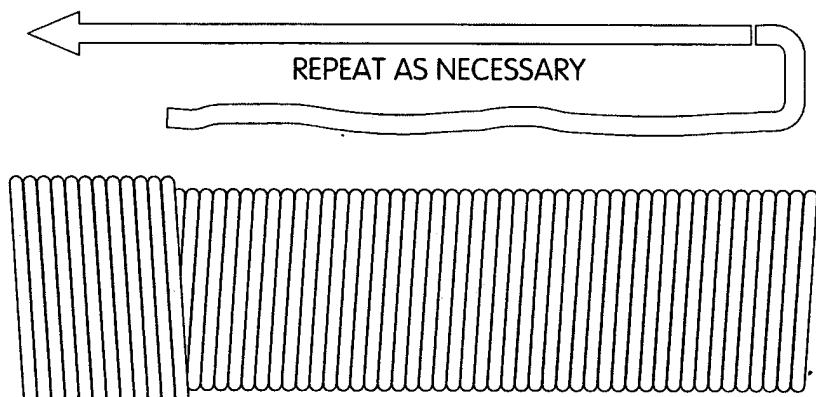


Fig. 12B

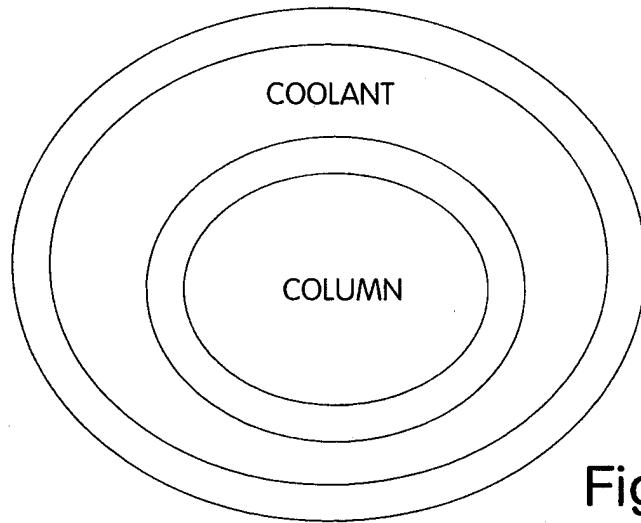


Fig. 12C

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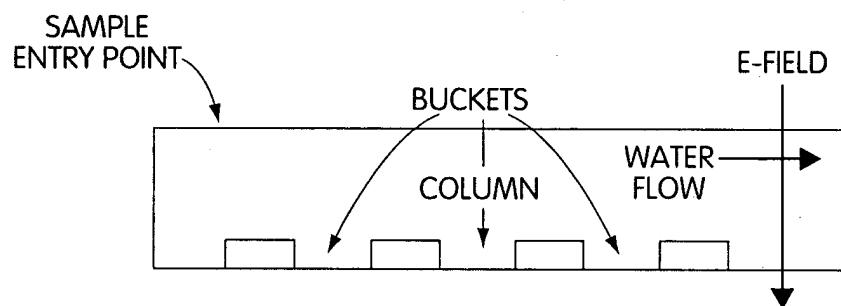


Fig. 13A

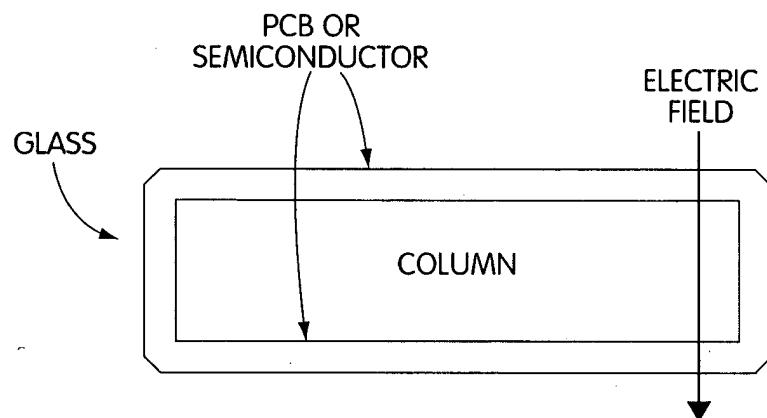


Fig. 13B

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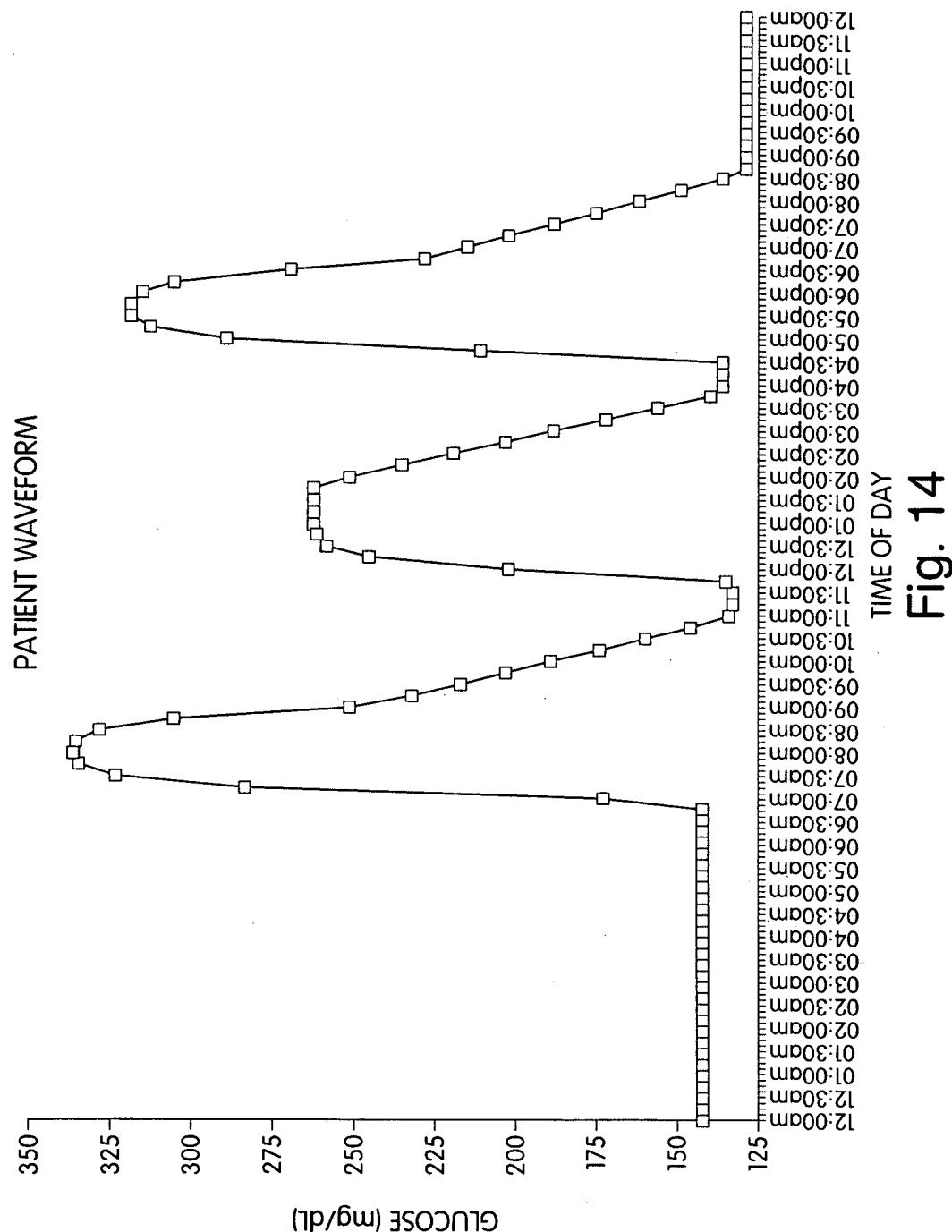


Fig. 14

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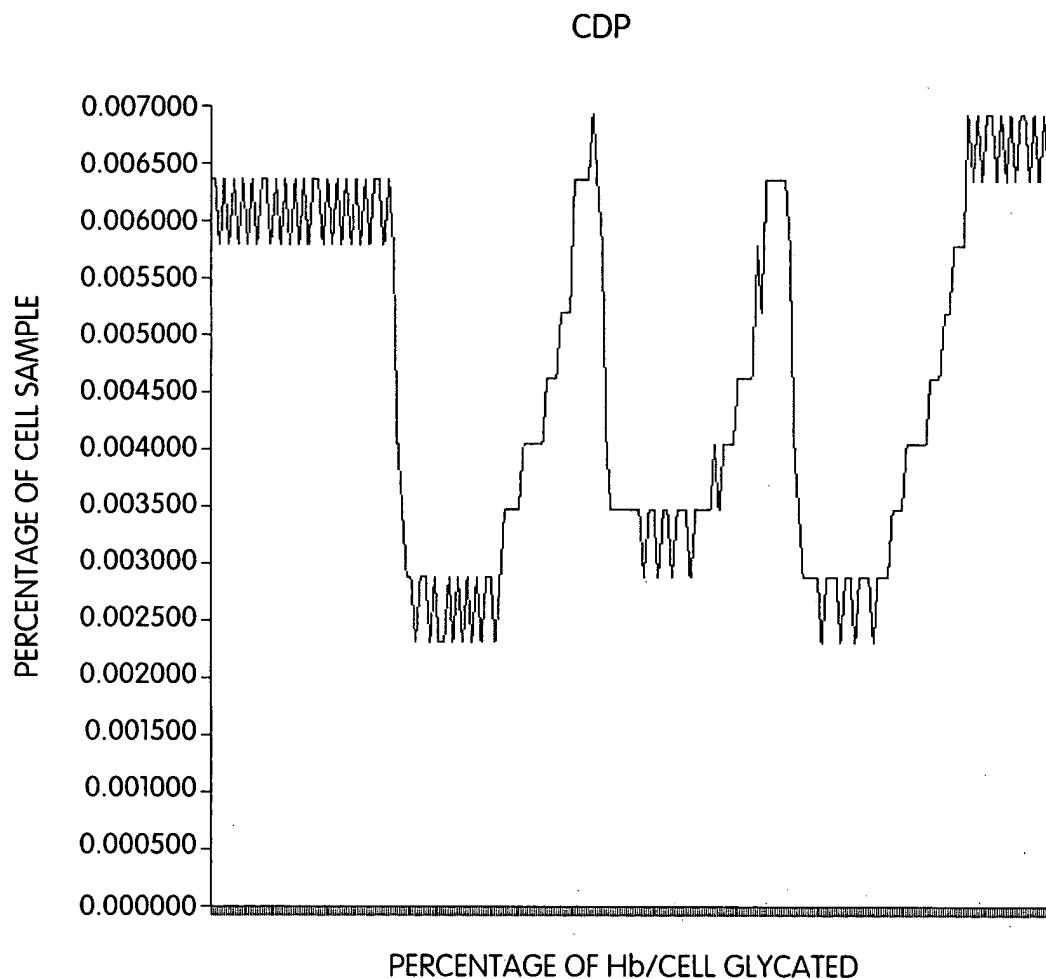


Fig. 15

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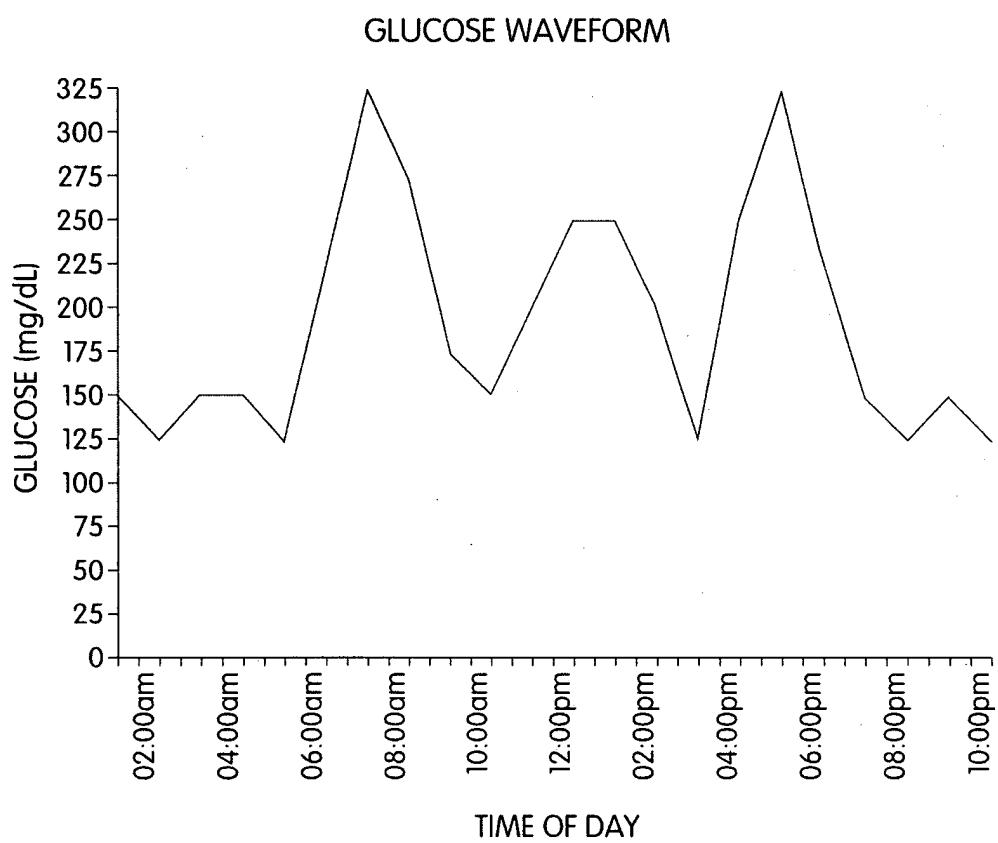


Fig. 16